AMENDMENTS TO THE CLAIMS:

1. (Canceled).

2. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~ wherein:

the first feedback system comprises a first mixer for multiplying the pilot signal and the monitor signal; a first low pass filter for providing the frequency deviation signal based on a low frequency component obtained from an output of the first mixer; and a

first differential amplifier for providing the amplitude control signal in accordance with a difference between an output of the first low pass filter and a first reference signal.

3. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~ wherein:

the second feedback system comprises a first oscillator for generating a multiplying frequency corresponding to a multiplication of the frequency of the pilot signal; a second mixer for multiplying an output of the first oscillator and the monitor signal; a second low pass filter for providing the multiplying frequency deviation signal based on a low frequency component obtained from an output of the second mixer; and a

second differential amplifier for providing the bias control signal in accordance with a difference between an output of the second low pass filter and a second reference signal.

4. (Original) The signal converter as defined in claim 2, wherein:

the second feedback system comprises a first oscillator for generating a multiplying frequency corresponding to a multiplication of the frequency of the pilot signal; a second mixer for multiplying an output of the first oscillator and the monitor signal; a second low pass filter for providing the multiplying frequency deviation signal based on a low frequency component obtained from an output of the second mixer; and a second differential amplifier for providing the bias control signal in accordance with a difference between an output of the second low pass filter and a second reference signal.

5. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~ wherein:

the second feedback system comprises a second oscillator for generating the frequency of the pilot signal; a band pass filter for providing a harmonic wave contained in the pilot signal; a third mixer for multiplying the harmonic wave and the monitor signal; a third low pass filter for providing a multiplying frequency deviation signal based on a low frequency component obtained from an output of the third mixer; and a third differential amplifier for providing the bias control signal in accordance with a difference between an output of the third low pass filter and a third reference signal.

6. (Original) The signal converter as defined in claim 2, wherein:

the second feedback system comprises a second oscillator for generating the frequency of the pilot signal; a band pass filter for providing a harmonic wave contained in the pilot signal; a third mixer for multiplying the harmonic wave and the monitor signal; a third low pass filter for providing a multiplying frequency deviation signal based on a low frequency component obtained from an output of the third mixer; and a third differential amplifier for providing the bias control signal in accordance with a difference between an output of the third low pass filter and a third reference signal.

7. (Original) The signal converter as defined in claim 3, wherein:

the first oscillator generates a twofold frequency of the frequency of the pilot signal.

8. (Original) The signal converter as defined in claim 4, wherein:

the first oscillator generates a twofold frequency of the frequency of the pilot signal.

9. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~

wherein the second feedback system comprises a first oscillator for generating a twofold frequency of the frequency of the pilot signal.

10. (Previously presented) The signal converter as defined in claim 9, wherein the second feedback system further comprises a second oscillator for generating the frequency of the pilot signal.

11. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~

wherein the second feedback system comprises a second oscillator for generating the frequency of the pilot signal.

12. (Previously presented) The signal converter as defined in claim 11, wherein output signals having the twofold frequency of the first oscillator and the frequency of the pilot signal of the second oscillator are respectively input into a bias controller.

13. (Previously presented) The signal converter as defined in claim 11, wherein output signals having the twofold frequency of the first oscillator and the frequency of the pilot signal of the second oscillator are respectively input into only a bias controller.

14. (Previously presented) The signal converter as defined in claim 11, wherein output signals having the twofold frequency of the first oscillator and the frequency of the pilot signal of the second oscillator are respectively input into a bias controller to eliminate a necessity of providing cosine and sine coupling circuits.

15. (Currently amended) A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal,

~~The signal converter as defined in claim 1,~~

wherein the second feedback system comprises:

a first oscillator for generating a signal for interior reference of a twofold frequency of the frequency of the pilot signal; and

a second oscillator for generating the frequency of the pilot signal.

16-19. (Canceled).